Application for an Incidental Harassment Authorization, for taking of small numbers of marine mammals by harassment, pursuant to 1994 amendments to the Marine Mammal Protection Act of 1972 as amended, section 101 (a)(5).

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Determination that an Incidental Harassment Authorization is the appropriate permitting option for the subject activity:

1) Is there any potential for serious injury or mortality to marine mammals in the area of activity?

Activity involves research on populations of black abalones (*Haliotis cracherodii* Leach, 1814) in rocky intertidal habitats at San Nicolas Island, California. The applicant made 106 separate field trips to San Nicolas Island from September 1979 through March 2006, with each trip averaging approximately 6 days in length. To date the applicant has done abalone survey work during low tides on 564 different days at nine permanent study sites on the Island. Species to be affected by proposed Incidental Harassment, in association with the subject research, are the California sea lion (*Zalophus californianus* [Lesson, 1828]), the Pacific harbor seal (*Phoca vitulina richardii* [Gray, 1864]), and the northern elephant seal (*Mirounga angustirostris* [Gill, 1866]). Animals likely to be affected by abalone research activity are those that are hauled out on land near study sites. Variable numbers of sea lions, harbor seals, and elephant seals typically haul out near six of the nine study sites, and rarely near a seventh (details below), used for abalone research. In addition, a single adult male Guadalupe fur seal (*Arctocephalus townsendi* Merriam, 1897) was seen at one abalone research site on two occasions during summer months in the 1980s. Breeding activity of the three relatively common pinniped species occurs at four of the seven sites used by hauled pinnipeds. In virtually all cases the shoreline habitats near the abalone study sites are gently sloping sandy beaches or horizontal sandstone platforms with unimpeded and non-hazardous access to the water for hauled animals. If disturbed, hauled animals may move toward the water without risk of encountering significant hazards. In these circumstances the risk of serious injury or death to hauled animals is nil. Although California sea lions haul out at some locations with precipitous relief along the San Nicolas Island shoreline, none of those locations is near any of the designated study sites for abalone research. Thus, abalone research activity poses no risk that disturbed animals may fall and be injured or killed as a result of disturbance at high-relief locations. There are two exceptions to the general pattern of

low risk of marine mammal injury or mortality associated with abalone research activity. First, if disturbances occur during breeding season for the species involved, it is possible that mothers and dependent pups may become separated. If separated pairs do not reunite in a short time, risks of mortality to pups may increase. Second, adult northern elephant seals may trample elephant seal pups if disturbed. Trampling increases the risk of injury or death to the pups.

2) Can the potential for serious injury or mortality be negated through mitigation requirements that could be required under the authorization?

The two possible categories of increased risk of injury or mortality, as indicated immediately above, can be mitigated with measures that could be required under the authorization. Disturbances to mothers with dependent pups, in the cases of California sea lions and Pacific harbor seals, can be mitigated by avoiding visits to study areas 5, 6, 7, and 8 (map provided below) during periods of breeding and lactation from middle February through the end of October. During such periods, abalone research work can be confined to sites 1, 2, 3, 4, and 9 where pinniped breeding and post-partum nursing does not occur. Male and juvenile California sea lions are often seen at sites 1 and 9, and rarely at site 4, but breeding and pupping activities have never been observed for any marine mammal species at sites 1, 4, or 9. Small numbers of northern elephant seals (< 10 individuals) are sometimes also seen at site 9, but breeding or pupping by northern elephant seals do not occur at site 9. Risks of trampling of elephant seal pups by adults are limited to the period from January through March when pups are born, nursed, and weaned, ending about 30 days post-weaning when pups depart for foraging areas at sea (more details below). However, elephant seals have a much higher tolerance of nearby human activity than do sea lions or harbor seals. Thus, all study sites can be occupied by researchers at any time of the year without disturbing elephant seals. Mitigation of the risk of disturbance simply requires that researchers are judicious in the route of approach to abalone study sites, avoiding close contact with elephant seals hauled out on shore.

As noted above, a single Guadalupe fur seal was seen at abalone study site 8 on two occasions during summer months in the 1980s. None have been seen during abalone research work since then. Guadalupe fur seals are distinctive in appearance and behavior, and can be readily identified at a distance without disturbance. Mitigation of possible harassment, injury, or mortality of Guadalupe fur seals will be achieved by immediately suspending research work and vacating any study area in which Guadalupe fur seals are seen. The applicant will not take any Guadalupe fur seal by incidental harassment, or in any other way, during activities associated with abalone research at San Nicolas Island.

<u>Given the above responses, it is the position of the applicant that an Incidental Harassment Authorization is the appropriate permitting option for the subject activity.</u>

Information required for consideration by the National Marine Fisheries Service of an application for Incidental Harassment Authorization:

(1) A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals:

The purpose of the activity is to assess trends in black abalone populations at San Nicolas Island, Ventura County, California (33º N, 119º W), over time in permanent study sites. Population trend data for black abalone populations have become important in a conservation context because of: a) the reintroduction of sea otters (*Enhydra lutris* [Linneaus, 1758]) to San Nicolas Island in 1987, raising the possibility of conflict between sea otter conservation and abalone populations (abalones are often significant prey for sea otters); b) the appearance of a novel exotic disease, abalone withering syndrome, at San Nicolas Island in 1992, resulting in dramatically increased rates of abalone mortality at the Island; and c) the recent designation of California populations of black abalones as a Species of Concern in the context of the Endangered Species Act of 1973 as amended. Research is done under the auspices of the Washington Cooperative Fish and Wildlife Research Unit (a component of the Cooperative Research Units Program, Biological Discipline, U.S. Geological Survey), the University of Washington, and the U.S. Navy (owner of San Nicolas Island), with additional logistical support from the University of California, Santa Cruz. Funding for this activity is currently provided by the U.S. Geological Survey, the California Sea Grant College Program, the Office of Protected Resources of the National Marine Fisheries Service, the College of Ocean and Fishery Sciences of the University of Washington, and the U.S. Navy.

The quantitative abalone surveys began in 1981 following reconnaissance surveys in 1979 and 1980, in anticipation of the Southern Sea Otter relocation program in that began in 1987. A map of the nine permanent study sites is provided in Figure 1 of a published paper (VanBlaricom 1993; copy attached). During the surveys done in 2002 it became clear that additional work could not be done at sites 5, 6, 7, 8, and 9 (see referenced map) without the possibility of incidental harassment of pinniped populations hauled out at or near the study locations. During survey work in 2003 and 2004, significant numbers of California sea lions were seen for the first time at sites 1 and 4. Thus, of the nine study sites used in for the abalone surveys, only sites 2 and 3 can be occupied without disturbing at least one species of pinniped. Subject marine mammal populations (especially California sea lions and northern elephant seals) at San Nicolas Island have grown substantially since the beginning of abalone research in 1979, and have occupied an expanded distribution at San Nicolas Island in association with population growth. Thus, sites previously accessible with no risk of marine mammal harassment are now being utilized by marine mammals at levels such that approach without harassment is no longer possible.

Research is conducted by counting abalones in plots of 1 m^2 along permanent transect lines in rocky intertidal habitats at each of the nine study sites at San Nicolas Island. Permanent transect lines are demarcated by stainless steel eyebolts embedded in the rocky habitat and secured with marine epoxy compound. Lines are placed temporarily between bolts during surveys and are removed once surveys are completed. Survey work is done by two field biologists working on foot. Additional methodological detail is available in VanBlaricom 1993 and VanBlaricom et al. 1993 (copies attached).

Monitoring of black abalone populations at San Nicolas Island can be done only during periods of extreme low tides. The exact date of a visit to any given site is difficult to predict because variation in surf height and sea conditions can influence the safety of field biologists as well as the quality of the data collected. In most years survey work has been done during the months of January, February, March, November, and December because of optimal availability of low tides. All work is done only during daylight hours because of safety considerations. Sites 5, 6, 7, and 8 are avoided from the second half of February through the end of October to avoid any risk of disturbance to newborn dependent pups of harbor seals and California sea lions. Because site 8 is avoided during summer months, it is the opinion of the applicant that the risk of taking of Guadalupe fur seals by incidental harassment during abalone research is nil. Northern elephant seal pups are present at the subject sites during winter months, but all age and sex categories of this species can be easily avoided without harassment. Thus, the months of November, December, January, and the first half of February generally are preferable for survey work in the context of minimizing the risk of incidental harassment of marine mammals. However, survey work from November through middle February may be interrupted more frequently than survey work in other months by large breaking surf resulting from winter storms. In some cases during winter, breaking waves may be large enough to compromise the safety of abalone survey personnel, requiring delays in survey work.

Resulting data likely will be accepted for publication in a refereed scientific journal, because resulting data are likely to contribute to the resolution of a conservation problem. Two papers have already been published from this study based on data collected in previous years (see above). Future publications in refereed scientific journals are quite likely. There is concern that the combined effects of sea otter predation and abalone withering syndrome, following on several decades during which black abalones may have been over-harvested in commercial and recreational fisheries, may cause reduction of black abalone populations to the point where risk of extinction increases. The long-term abalone population trend data from San Nicolas Island will be crucial in determining if drastic population declines continue, and if extinction risk becomes high.

(2) The date(s) and duration of such activity and the specific geographical region where it will occur:

It is requested that the subject Incidental Harassment Authorization be effective for the period 1 December 2006 through 30 November 2007.

As presently planned this research will extend over a period of three years, from 2006 through 2008, in large part as a result of new funding recently provided by the Office of Protected Resources of the Southwest Region, National Marine Fisheries Service. Additional work in years after 2008 remains a strong possibility, pending decisions on funding and assignment of staff effort. Surveys of abalones will be done each year during the three-year period. During each survey year, each of the nine study sites at San Nicolas Island will be visited twice. Each visit to a given study site lasts for a maximum of 4 hrs, after which the site is vacated and can be reoccupied by any hauled marine mammals that were disturbed by the presence of researchers.

The subject research will be conducted at San Nicolas Island (33º N, 119º W), Ventura County, California, USA. Specific study areas at San Nicolas Island are indicated in figure 1 of VanBlaricom 1993 (copy attached). Specific study areas at which harassment of marine mammals may occur are identified in the map as sites 1, 4, 5, 6, 7, 8, and 9. Sites 2 and 3 do not have resident pinniped populations, and can be visited without any risk of marine mammal harassment. Sites 1 and 9 are used for hauling out by non-breeding northern elephant seals and non-breeding California sea lions, and site 4 is used by non-breeding California sea lions.

(3) The species and numbers of marine mammals likely to be found within the activity area:

The following marine mammal species may be present on haulout sites in the immediate vicinity of abalone research sites at San Nicolas Island: California sea lion, Pacific harbor seal, northern elephant seal, and Guadalupe fur seal. Sites are indicated in figure 1 of VanBlaricom 1993 (copy attached). Following (Table 1) are estimates of the maximum likely numbers of marine mammals that would be present in immediate proximity to abalone survey study areas during periods of visitation by abalone researchers. These estimates are based on observations recorded by the applicant at San Nicolas Island during abalone research work from 2003 through 2006, under the auspices of two previous Incidental Harassment Authorizations issued by NMFS. Data were collected during non-breeding periods for California sea lions and Pacific harbor seals.

Table 1: Maximum numbers of marine mammals, by species, likely to be found hauled out in or near abalone survey study areas at San Nicolas Island. (*) denotes non-breeding animals.

Site	Sea lions	Fur seals	Harbor seals	Elephant seals
1	60*	0	0	5*
2	0	0	0	0
3	0	0	0	0
4	150*	0	0	0
5	150	0	30	100
6	250	0	40	300
7	650	0	10	80
8	500	1	0	20
9	10*	0	0	20*
Totals:	**1770**	**1**	**80**	**525**

(4) A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities:

California sea lion:

a) Status: California sea lions at San Nicolas Island are part of the U.S. stock, as defined by the National Marine Fisheries Service (NMFS). The most recent NMFS Stock Assessment Report (SAR) for the U.S. stock of California sea lions is dated 15 December 2003 (www.nmfs.noaa.gov/pr/pdfs/sars/PO03casealion.pdf).
The SAR of 2003 reports that the stock is not listed as "endangered" or "threatened" as defined by the Endangered Species Act of 1973 as amended (ESA), nor is the stock listed as "depleted" as defined by the U.S. Marine Mammal Protection Act of 1972 as amended (MMPA). Because total annual rates of human-caused mortality are less than the calculated Potential Biological Removal (PBR), the stock is not considered "strategic" as defined by MMPA. The stock has been growing at a rate of between 5.4% and 6.1% per anum in recent years. The minimum population estimate for the stock was 138,881 in

2001, the most recent year for which comprehensive field survey data are available.

b) Distribution: The U.S. stock of California sea lions ranges from the U.S.-Mexico border northward into Canada. The primary breeding locations for the stock are in the islands of southern California, and in particular San Miguel and San Nicolas Islands.

c) Seasonal distribution: California sea lions are present in large numbers at San Nicolas Island at all times of the year. Adult males are most abundant in spring and summer in association with the breeding season. During autumn and winter most adult males may disperse to distant locations, primarily to the north, in order to forage. Pups are born in early summer. Time to weaning is variable and may extend to the following breeding season. The weaning process may be gradual, with pups learning to hunt and consume live prey while still nursing. Pups more than a few months of age are similar to adults in mobility, agility, and alertness to disturbances when hauled out.

Guadalupe fur seal:

a) Status: Guadalupe fur seals at San Nicolas Island are part of the single stock for the entire species, as defined by NMFS. The most recent NMFS SAR for Guadalupe fur seals is dated 15 December 2000 (www.nmfs.noaa.gov/pr/pdfs/sars/PO00guadalupefurseal.pdf). The SAR of 2000 reports that the species is listed as "threatened" as defined by ESA, and both "depleted" and "strategic" as defined by MMPA. The species has been growing at a rate of 13.7% per year in recent years. The minimum population estimate for the species was 3,028 in 1993, the most recent year for which an estimate is available.

b) Distribution: Guadalupe fur seals range along the west coast of the U.S. and Mexico from 17º to 38º N latitude. The primary breeding locations for the species are at Isla Guadalupe and Isla Benito del Este, Mexico. Sightings of Guadalupe fur seals north of the U.S.-Mexico border are relatively rare, occurring mainly at San Miguel and San Nicolas Islands.

c) Seasonal distribution: Since 1980 all sightings of Guadalupe fur seals at San Nicolas Island have been made during summer months coinciding with the breeding season.

Pacific harbor seal:

a) Status: Pacific harbor seals at San Nicolas Island are part of the California stock, as defined by NMFS. The most recent NMFS SAR for the California stock of Pacific harbor seals is dated 1 November 2005 (www.nmfs.noaa.gov/pr/pdfs/sars/po2005sehr-ca.pdf). The SAR of 2005 reports

that the stock is not listed as "endangered" or "threatened" as defined by ESA, nor is the stock listed as "depleted" as defined by MMPA. Because total annual rates of human-caused mortality are less than the calculated PBR, the stock is not considered "strategic" as defined by MMPA. Growth of the stock has been slowing in recent years, and the 2005 SAR indicates that the stock size may be stabilizing as a result of proximity to environmental carrying capacity. The minimum population estimate for the stock was 31,600 in 2004, the most recent year for which comprehensive field survey data are available.

b) Distribution: The California stock of Pacific harbor seals ranges from the U.S.-Mexico border northward to the Oregon-California border.

c) Seasonal distribution: Harbor seals are present at San Nicolas Island during all months of the year. Pups are born during the period from late February to early April, and are fully weaned and independent approximately two months after birth.

Northern elephant seal:

a) Status: Northern elephant seals at San Nicolas Island are part of the California stock, as defined by NMFS. The most recent NMFS SAR for the California stock of northern elephant seals is dated 31 October 2002 (www.nmfs.noaa.gov/pr/pdfs/sars/PO02northernelephantseal_CAbreeding.pdf). The SAR of 2002 reports that the stock is not listed as "endangered" or "threatened" as defined by ESA, nor is the stock listed as "depleted" as defined by MMPA. Because total annual rates of human-caused mortality are less than the calculated PBR, the stock is not considered "strategic" as defined by MMPA. The stock has been growing in recent years. The minimum population estimate for the stock was 60,547, based on data collected in 1996 (for central California) and 2001 (for southern California), the most recent years for which estimates are available.

b) Distribution: The California stock of northern elephant seals ranges from the U.S.-Mexico border northward to pelagic habitats off Alaska. Primary breeding locations for the California stock are at San Miguel and San Nicolas Islands off southern California, Año Nuevo Island off central California, and Pt. Piedras Blancas on the central California mainland coast.

c) Seasonal distribution: Northern elephant seals are present at San Nicolas Island during all months of the year. However, northern elephant seals make two annual round-trip migrations per year between breeding locations and foraging locations, the latter in the pelagic north Pacific and Gulf of Alaska off Oregon, Washington, British Columbia, and Alaska. The migration schedule varies by age and sex category. Adult males arrive at San Nicolas Island in late fall to establish breeding territories. Adult females arrive on the Island in early winter. Subadult animals also return to the Island during the breeding season, although they do not

actively participate in breeding. Pups of the year are born primarily in January and are fully weaned by the end of February, departing from the Island for their first foraging trip during late winter and early spring. Breeding adults of both sexes depart breeding sites for foraging purposes in March. Prior to the onset of the next breeding season, all age and sex categories make a round trip from foraging habitats back to the Island, then back again to foraging areas. The purpose of this second annual migration relates to the molting cycle of the seals. The timing of the second migration varies by age and sex. At San Nicolas Island, adult males return for molting beginning in June and depart back to foraging areas in August. Adult females and juveniles return for the molt period beginning in mid-March and depart back to foraging areas in May. Finally, juveniles ranging in age from young-of-the year to four years return for an extended haulout period from September through November. This latter haulout period is not associated either with breeding or molt.

(5) The type of incidental taking authorization that is being requested (i.e., takes by harassment only; takes by harassment, injury and/or death) and the method of incidental taking:

The applicant requests authorization for incidental takes, by harassment only, of California sea lions, Pacific harbor seals, and northern elephant seals. Authorization for taking of Guadalupe fur seals by harassment is not requested. Harassment will result when hauled marine mammals move to increase distance from persons involved in abalone surveys. In no case will marine mammals deliberately be approached by abalone survey personnel. However, approach may be unavoidable if marine mammals are hauled out directly upon the permanent abalone study plots. In all such cases every possible measure will taken to select a pathway of approach to study plots that minimizes the number of marine mammals harassed. Sites occupied by Guadalupe fur seals will be vacated without taking of Guadalupe fur seals by harassment. Similarly, in the unlikely event that one or more sea otters (under jurisdiction of the U.S. Fish and Wildlife Service) is observed hauled out at any of the study sites, such sites will be vacated without taking of sea otters by harassment.

(6) By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in paragraph (a)(5) of this section, and the number of times such takings by each type of taking are likely to occur:

Estimates are based on the maximum numbers of animals that could reasonably be taken by incidental harassment during one visit of four hours duration during a low tide period, for purposes of survey of local abalone populations in permanent study plots, at each of the study sites listed.

Using the data presented in Table 1 and assuming a maximum level of incidental harassment of marine mammals at each site during each visit, the applicant estimates that maximum total possible numbers of individuals disturbed by incidental harassment,

resulting from one complete cycle of visits to the nine permanent study sites, would be 1,770 California sea lions, 75 Pacific harbor seals, and 525 northern elephant seals. As noted, sites occupied by Guadalupe fur seals or sea otters will be vacated immediately, and no taking of Guadalupe fur seals or sea otters is anticipated. Two visit cycles are anticipated during the period of the requested Incidental Harassment Authorization.

Available data are not adequate to fully break down anticipated takes by age and sex within species. However, limitation of visits to sites 5, 6, 7, and 8 to November, December, January, and the first half of February will reduce takes of dependent pups of California sea lions to near zero, and of dependent pups of Pacific harbor seals to zero. As noted previously, takes of northern elephant seal pups will be reduced to zero by avoidance of seal pups during approach to the study locations.

(7) The anticipated impact of the activity upon the species or stock:

In the opinion of the applicant, the proposed continuation of black abalone research at San Nicolas Island will result in no detectable impact on California sea lions, Guadalupe fur seals, Pacific harbor seals, northern elephant seals at San Nicolas Island, nor on stocks of any of the four species as defined by NMFS (see above). Similarly, there is no anticipated detectable impact on the small population of sea otters that occurs at San Nicolas Island.

(8) The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses:

There is no anticipated impact of this kind. To the knowledge of the applicant, no subsistence harvest occurs in the state of California for any of the species that will be subject to incidental harassment as a result of the subject research on black abalone populations.

(9) The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat:

There is no anticipated impact of the subject abalone research on the habitats of any of the species likely to be subject to incidental harassment as a result of the research activity.

(10) The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved:

Not applicable. No impact on habitat is anticipated (see response to item #10 immediately above).

(11) The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat,

and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance:

Methods and manner of effecting the least practicable adverse impact upon affected species at San Nicolas Island have been discussed in some detail above. To summarize, for California sea lions and Pacific harbor seals, possible adverse impacts are most effectively minimized by working at sites 5, 6, 7, and 8 only during the months of November, December, January, and the first half of February. Guadalupe fur seals have been seen only at site 8, and only during summer. Thus, limitation of visits to site 8 to the period November through the first half of February eliminates the risk of taking of Guadalupe fur seals by harassment. It is the applicant's intention to work at sites 5, 6, 7, and 8 only during the months of November, December, January, and the first half of February. For northern elephant seals, possible adverse impacts can be minimized readily by avoiding the immediate proximity of hauled seals during approach to study areas, and during collection of data on abalone populations while at the study areas. It is the applicant's intention to follow this protocol as well.

(12) Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a "plan of cooperation" or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses:

Not applicable. The proposed activity will not take place near a traditional Arctic subsistence hunting area, nor will the proposed activity affect the availability of a species or stock of marine mammal for Arctic subsistence uses.

(13) The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding. Guidelines for developing a site-specific monitoring plan may be obtained by writing to the Director, Office of Protected Resources:

All biological research activities at San Nicolas Island are subject to approval and regulation by the Environmental Planning and Management Department (EPMD), Naval Air Warfare Station China Lake, U.S. Navy. The U.S. Navy owns San Nicolas Island, uses it for testing of various military capabilities, and closely regulates all civilian access to and activity on the Island, including biological research. At present, the point of contact for biological researchers working at the Island is EPMD.

Status and trends of pinniped aggregations at San Nicolas Island, including California sea lions, Pacific harbor seals, and northern elephant seals are monitored primarily by staff of NMFS Southwest Fisheries Science Center, located in La Jolla, California. Monitoring work is based primarily on aerial surveys done under the direction of Mr. Mark Lowry. In addition, long-term studies of pinniped population dynamics, migratory and foraging behavior, and foraging ecology at San Nicolas Island are being done by Dr. Brent S. Stewart of the Hubbs-Sea World Research Institute (HSWRI), located in San Diego, California. Dr. Stewart's work is focused primarily on northern elephant seals and includes tagging of individual seals to measure survival rates and breeding success. Dr. Stewart and colleagues also monitor occurrences of Guadalupe fur seals at San Nicolas Island.

During ongoing abalone research at San Nicolas Island since 1979, the applicant has made a maximum effort to avoid contact with or immediate proximity to hauled pinnipeds in order to avoid taking of marine mammals by incidental harassment. Recognizing the need to avoid takes by incidental harassment, and recognizing the ongoing monitoring and research efforts by NMFS and HSWRI, it is the applicant's opinion that purposeful direct involvement in monitoring or research with pinnipeds at San Nicolas Island by the applicant is inappropriate and unwarranted. However, ongoing pursuit of abalone research by the applicant at San Nicolas Island can contribute to the general goal of improved monitoring and research of pinnipeds at San Nicolas Island in three specific ways.

1) Chance observations by the applicant or his associates of unusual behaviors, numbers, or distributions of pinnipeds at San Nicolas Island can be reported to NMFS, HSWRI, and EPMD, such that any potential follow-up observations can be conducted by the appropriate personnel with coordination of activities through EPMD.

2) Chance observations by the applicant or his associates of tag-bearing carcasses of pinnipeds at San Nicolas Island can be reported to EPMD, allowing transmittal of the information to appropriate agencies and personnel. In this way, any potential follow-up observations can be conducted by the appropriate personnel with coordination of activities through EPMD.

3) Chance observations of rare or unusual species of marine mammals occurring at or near San Nicolas Island can be reported to EPMD, allowing transmittal of the information to appropriate agencies and personnel. In this way, any potential follow-up observations can be conducted by the appropriate personnel with coordination of activities through EPMD.

In addition, observations falling into any of the three categories listed immediately above can be described in annual reports to the NMFS Office of Protected Resources if so stipulated as part of the permitting procedure. In the opinion of the applicant, activities by abalone research personnel directed toward pinniped monitoring and research, beyond

the three specific areas described immediately above, are either not feasible or not appropriate.

(14) Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects:

Coordination with EPMD is clearly the appropriate avenue for ensuring that activities causing various kinds of taking of hauled pinnipeds at San Nicolas Island are coordinated, ensuring that the aggregate numbers of takes of pinnipeds at the Island are minimized. The applicant is committed to honoring this process as a means of minimizing taking of pinnipeds by incidental harassment. The applicant has a long-standing and effective professional relationship with EPMD staff, and there are no difficulties anticipated in this regard.

If so stipulated by the NMFS Office of Protected Resources, the applicant is willing to enter into a reciprocal agreement for information exchange with researchers at NMFS and HSWRI regarding coordination and scheduling of research activities at San Nicolas Island. The primary purposes of such an agreement would be twofold. First, such an agreement would facilitate scheduling of abalone research activities such that associated incidental harassment of pinnipeds does not influence the quality of data collected by NMFS or HSWRI. Second, such an agreement would facilitate scheduling of research work by NMFS and HSWRI such that field activities would not be planned during periods of maximum daytime low tides, when abalone field work can be done with maximum efficiency and safety.